

Zero Beat

The Hampden County Radio Association, Inc.

Springfield, Massachusetts

ARRL Affiliated, our 38th year

Next Meeting:

Friday June 6th
Feeding Hills
Congregational Church

HCRA Annual Meeting

Banquet
Donation \$5.00

Doors open at 6:30 PM

Directions to Field Day

Hampden County Radio Association
Field Day Site at Middlefield, MA
28-Jun-86 thru 29-Jun-86

From Westfield, MA travel on Route 20 west to Chester, MA.

In Chester, turn right at schools onto Middlefield Road. Drive North along the river approximately 1.5 miles to an iron bridge, currently under construction.

Cross bridges and immediately turn left, continuing north on Middlefield Road. You should arrive in Middlefield center in approximately 4 miles.

In Middlefield, turn right at the Mobil station and proceed east on Bell Road for approximately one half mile.

Turn right into the Middlefield fairgrounds.

Enjoy!

HCRA Zero Beat June 1986

June Banquet

Friday, 06-Jun-86, will be the Hampden County Radio Association's annual meeting and June banquet. Dave Sumner, K1ZZ, will be our featured guest speaker. He will discuss the ARRL's Novice license proposal, which was recently released by the FCC. Dave will also bring with him a look at the future of Amateur Radio, as he projects what will occur in the next five to ten years. We will make sure there is time for a question and answer period, so if any of these topics are of interest to you, you'll want to make sure to attend!

We will again have a smorg, as we did last year. Since we have a limited amount of seating available, it is suggested that you get your tickets early. Contact any board member; you must make your reservation (and pay for your ticket) by Sunday 01-Jun-86, as we have to have an accurate count by then. The donation is \$5.00.

This is also our annual meeting. In addition to the normal business we handle at the annual meeting, this year we have a by-laws change before the membership. The text of the proposed by-law changes, as approved by your board of directors, and associated comments, appears elsewhere in this issue.

The four officers' terms are one year, and are up for re-election. In addition, four of the directors' positions expire this year. If you are interested in a position on the HCRA board, please contact any current board member, or Steve Nelson, WA1EYF, at 413-596-8216. There are a number of positions open, and if you have any interest, we'd like to hear from you!

We will also have a few awards and goodies to pass out, too.

The banquet will be held at the Feeding Hills Cong. Church, in the center of Feeding Hills. The doors will open at 6:30 PM, with dinner served promptly at 7:00 PM. Hope to see you there!

Get your banquet tickets early!
Call Ron WB1ETS at 739-5228

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President's Corner

How many of you are aware that there is some major changes that may occur to Amateur Radio here in the US? From talking with many of you, I see that not too many people are really aware about the ARRL's Novice Proposal. Most everybody knows there are changes in the works, but I think most people don't really know the facts.

Since the *President's Corner* is a place where the President gets to give his opinion, I'm going to elaborate on my feelings. I hope that you will take the time to come to the June 6th Annual Meeting, where Dave Sumner, K1ZZ, will discuss this, and the future of Amateur Radio, with us.

I feel that these changes will have a significant negative impact on a great part of Amateur Radio. If it does, we are all responsible. The current system relies on **ourselves** to bring new people into the ranks, and provide them with the necessary handholding and training. I fear that in this day and age the art of Amateur Radio is quickly changing. Even as recent as the late sixties and early seventies, when I first became licensed, ham radio was a hobby, an art, of radio. Sure, there were lots of people who had "commercial" radios. But I found that the majority of hams had some vested interest in "home brew" equipment. Well, fifteen years later its a totally different story.

Sure, I'm guilty of it, too. The shack is now full of rigs from Japan; you turn them on and go, just like a toaster. The art of electronics, whether digital or analogue, is quickly vanishing from ham radio. A great deal of Amateur Radio has absorbed the craze of the seventies: personal communications.

The whole concept of a novice license today is to get a *one on one* relationship with another ham, who will provide training and support, administer an examination, and get you on the air. This is an entry level license, a stepping stone to the classes above. How many of you have given a Novice exam in the last few years? How many of you have helped a new Novice get a station on the air? I fear that there is a small group of us who are doing the job for all.....

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Novice Proposal

The ARRL has prepared a proposal to modify the Novice class license. Among some of the changes the League proposes is: a 200 khz voice segment on 10m; digital modes (packet / RTTY) on 10m; all modes on 220 mhz with a maximum of 25 watts; and operation with limited power on 1.2 ghz. If you would like a full copy of the proposal, please send a self addressed stamped envelope to the ARRL, 225 Main Street, Newington, CT 06111.

For Sale

Heath HW101 transciever with CW filter and HP23B power supply \$300. Heath HDP121A mike \$25. Heath scope SB614 \$100. All with manuals. \$375 takes all. Call Lou WA1WTK at 413 583-2366 (Ludlow MA) after 05:30 PM weekdays, and any time on weekends.

For Sale

Bob and Eunie Gordon's (W1KUL & W1UKR) great VHF location in Monson is for sale. 900 feet above sea level, 50 foot tower with tri-bander, 75 and 40 meter inverted vees, and 2m ringo ranger. Complete operating position can include the 2kw HF amplifier. Three bedroom cape, two car garage, finished cellar with workshop. 300 foot front by 400 foot deep lot. Call 267-9694 after May 1.

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President's Corner

When I first had my Novice license, it was a one year non-renewable ticket; I could operate in the same bands the Novice can now, but with NO VFO! A few years before that, Novices had voice privs on 2m, before the craze with 2m FM gear! Now there are 78,000 Novices in the country, and the licenses are good forever. I can't agree that the Novice license turns people away from ham radio. Sure the sun spots are down (it happens every cycle), and the 40m Novice band is a joke trying to compete with the Broadcasters, and 80m with the SSB from up north. Anyone think of expanding the CW segments for Novices? Maybe that's too simple a solution.....

The Tech license exam is not hard to pass. And if you get on CW as a Novice, you shouldn't have any problem passing the 13 WPM, which would give you a General class ticket. But this is the good 'ole USA, where you should get more for less, so the League's proposal would grant voice privs to all Novices. I believe this is not solving the real problem. It certainly will enhance our numbers. I don't believe that there will be any drive to get Novices to upgrade further, if a niche is created where they can live forever.

Here in our area the HCRA has gone to great efforts to sponsor license classes and exam sessions for all classes of licenses. Our attitude is that we will not let you fail. Anyone who wants to get a license, or upgrade, bad enough, has had a place to go. This is not an easy job. Again, it is a small group of people spending the time to be instructors in the classes, and helping those who want to enter and advance through our license programs.

On the other hand, we are also guilty. We help you pass the exam, but don't have much time to spend on training. How do you feel about some of the stuff that occurs on 80m or 20m phone? That's another reason I stay in the CW segments! Its not just Novices that need training, even the best of us could use some lessons. Who is going to train the existing 78,000 novices, never mind the significant influx of new hams, on how to operate a radio? We don't need any more lids on the bands.....

The 10m allocation for SSB scares me! I wish someone could audit how many old amateur rigs are now being used in the 11m service. With deregulation upon us, who is going to ensure that they don't migrate into our service? Its sad, but need I remind you of the crew on one of our local repeaters? We are now charged with policing our own bands.

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Continued...

Another push is to get new young blood into Amateur Radio. It is said that this can be done by the digital modes, namely packet radio. Well, I can't see why a Novice licensee would get excited about packet on 10m or 220 mhz. I'm not going to go out and buy a 220 rig to talk to Novices - why didn't the proposal give them privs for packet where the packet stations are? Boy, am I confused!

How many kids do you know that are going to get into Amateur Radio to communicate via computer, when a packet TNC still will set you back some big bucks, and then you've got to buy a rig, etc. I can't see anyone doing it for under \$300 to \$400 - money that may be better spent on cars, entertainment, etc. Big difference compared to a \$75 home PC.

Enforcement of the proposed rule changes is another problem. Novices would have full privs on 220, but not be allowed to put up a repeater. In addition, they would be limited to only 25 watts of power. Who is going to stop them from buying a "brick", or a rig that runs more than 25w?

Lastly, I think this whole thing stinks of commercialism. Did you see the back page of the latest QST? Kenwood has the *new* TM-3530A, a 25w 220 mhz FM transceiver. There's lots of support from both the ham radio vendors (they stand to make millions, selling rigs to the new ranks, and the 78,000 existing Novices) and other organizations, including the League and clubs (they stand to gain significant increases in their membership). An easy way for a club to capture additional membership is to build a 220 repeater, just for Novices. And of course, if you can't get existing hams to join the League, you'll do much better trying for new hams.....

Are we looking for quantity?
or quality!

All too often we judge things by numbers: quantity. This is one major problem with our society: we've put quantity in front of quality. I'd rather see 100,000 good hams than a million lids. I filed a dozen pages of comments to the FCC when the League first drafted this proposal. I will be sending in additional comments. If anyone would like a copy, please drop me a note to P.O. Box 17, Feeding Hills, MA 01030-0017. You can get a copy of the League's proposal directly from them, see their address elsewhere in this issue.

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President's Corner, continued...

It is important that you take a look at this issue. It doesn't matter whether you agree or disagree with me. If you have a strong feeling either way, you should voice it! It is sad, with over 400,000 hams, that only a hand full or less respond to issues before the FCC regarding the Amateur Service. The ARRL is our voice in Washington. Since they are the ones that have made this proposal, it is very important that you voice your opinion, whether in support or against the proposal.

Bob McCormick, KA1KPH

FIELD DAY 1986

Please join us for Field Day 1986! The Hampden County Radio Association will again be sponsoring a Field Day operation, held June 28 & 29, and will use the club call W1NY. This year we will set-up at the Middlefield Fair Grounds. If you are interested, please call Paul Kress, WA1ZKT, in Westfield at 413-568-8291. Paul can usually be reached between 7:00 PM and 10:00 PM any evening.

All are welcome to come. We will have CW and Phone stations on 80, 40, 20 and 15 meters which will be available for everyone who wishes to operate. We also welcome anyone who wishes to set up their own station and we can take turns operating on the bands if more than one station is on a band. The location is ideal for anyone who would like to work the VHF bands and there is plenty of room if anyone would like to operate 160 meters.

The site is suitable for campers and tents. Toilets are available. We plan a spaghetti dinner at 5:00 PM on Saturday and scrambled eggs at 8:00 AM on Sunday for those who would like to eat. We provide soda and coffee and ask for small donations (no one keeps score) to help offset expenses. Remember, Field Day is our once

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a year chance to prove our ability to operate in abnormal situations under less than optimum conditions. Please come and help out with the club effort.

Even if you are unable to join us in Middlefield, please consider some operating time from your home QTH, or stop by the MTARA Field Day in Agawam - this is one exercise that all hams should participate in! The full Field Day rules can be found in the May 1986 QST on page 79.

By-Laws Update

The Hampden County Radio Association was incorporated in September of 1954. Our by-laws have undergone many changes throughout the years. Within the last two years the HCRA board has realized that we again had to bring the by-laws up to date.

Although the HCRA was established as a not for profit organization back in 1954, the paperwork to reaffirm this was redone in 1980. We now have noticed that the by-laws submitted to the IRS and the state at that time, did not include many of the recent (1970's) changes; the 1954 by-laws is what's on record. Our primary purpose in the by-laws presentation at the upcoming annual meeting is to have the membership ratify a complete set of by-laws that reflect the operation of the club.

In addition, there were a number of areas where the board felt changes were necessary to meet the needs of the membership, both now and for the future. Most of these enhancements were nearly minor changes, additions, or deletions. We have made no major changes to the by-laws.

The full text of the by-laws, as approved by the directors, is contained in this issue of Zero Beat for your review. This publication of our by-laws, together with the annual meeting announcement to all members, satisfies the by-laws procedure for modification.

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Annual Meeting Friday June 6th

HCRA Zero Beat June 1986

What follows is an breakdown of the by-laws of the corporation. A description of the changes, if any, related to the original 1954 by-laws is given. You will also note those areas with changes that were previously approved, and those changes proposed by the joint 1984-1985 and 1985-1986 Boards of Directors.

Article I - Membership

In section 1 the reference to the Hampden County Radio Club (pre 1954) has been removed. Reaffirm the procedure for membership, which was previously approved.

Section 2 reworded to make it easier to understand. Remove the reference to the FCC; if you've got a valid Amateur Radio license from any country, you can be a regular (voting) member of the HCRA. All non-licensed members are associate members.

Article II - Officers

Reaffirm in section 5 that the Directors of the corporation determine the application form, and approve candidates for membership in the club; previously approved.

Article III - Meeting

In section 1 reaffirm that the annual meeting is held in June of each year.

A new change in section 2 that requires monthly meetings and allow the Directors to waive the requirement for the monthly meetings. Meetings were required monthly, except July and August. This provides for the handling of the situation occurring with the May flea market, which isn't really a meeting of the club.

Article IV - Quorum

No changes.

Article V - Dues

In section 1 reaffirm that the annual dues are due in November of each year. Add a new change that specifies November 1st as the due date for dues.

In section 2 reaffirm a change from years ago where the Directors were given the responsibility to set the annual dues each year.

Section 4 is a new section for this Article. In the past, the HCRA had one annual dues amount paid by all members. The inclusion of the dues *schedule* allows us to offer reduced membership rates for youngsters and families; this was announced earlier this year. It also provides the Directors the ability to accept or reject a membership dues schedule selection: we won't let you check the youngster box when you've been a ham for 25 years!

Article VI - By-Laws

No changes.

Article VII - Miscellaneous

No changes.

We hope that you will find these by-laws satisfactory. They have been approved by the board and are now before you for your approval. Please feel free to contact any board member if you have further questions prior to the annual meeting. Any member may request copies of our original by-laws or incorporation papers by writing to the HCRA, P O Box 482, West Springfield, MA 01090-0482.

Bob McCormick KA1KPH
Chair, By-Law Committee

Path Loss & VHF/UHF Communications

Path loss is the amount of attenuation that occurs to a signal as it travels through space. Most of us know about the gains and losses associated with our station equipment, but we don't usually take path loss into consideration in the selection of amateur equipment. This article will give you some insight into what path loss is, and how to consider path loss when looking at your current or future station needs.

There is a simple equation that you can use to calculate path loss. See Figure 1. As you can see, the path loss increases whenever you increase your operating frequency and/or the distance between two stations. The path loss for two dipole antennas spaced one wavelength apart is 19.85 db. For those of you who are not into the math, please refer to Figure 2, where the losses have been computed in db for the 2m and 70cm amateur bands over a range of miles. Figure 2 will be discussed in more detail later.

$$\text{PATH LOSS} = 36.6 + 20 \log(\text{mhz}) + 20 \log(\text{miles})$$

Figure 1

As you may have guessed by now, this computation of path loss is just the text book approach, and represents the best possible case. Other factors certainly create additional degradation of signals as they pass from transmitter to receiver. In fact, about the only type of communications where the computed path loss is accurate is the up and down links to satellites.

According to the NAB Handbook, terrain plays a major part in the degradation of the signal in conjunction with path loss. A smooth terrain will have a loss of about 6 db, one that is rather hilly or with small mountains will increase the loss to 12 db, and mountainous terrain can observe an added loss of over 23 db.

As you can see by the numbers in Figure 2, the path loss for 70cm is always 10.0 db more than 2m, given the same distance. This is a very important point to note! For those of you who don't remember what db's equate to, a loss of 3 db is half the power, and a loss of 10 db is one tenth the power.

performance (usually with pre-amps), better coax and connectors, and especially duplexors, can keep the loss to a minimum.

Likewise, the inverse direction also holds true. To compensate for path loss and decreased 70cm

	Distance in Miles							
	2.5	5.0	10.0	20.0	30.0	50.0	100	
445 mhz	98	104	110	116	119	124	130	
146 mhz	88	84	100	106	109	114	120	

Figure 2

Let us look at an example of what this may mean. We will start with a fictional repeater operating on 2m: W1NY. Of course, we need a repeater user located nearby. Let's call him W1AW. At W1AW there is a one watt rig and simple antenna. We'll also assume that W1AW is just barely making it into the W1NY repeater. Note that for this discussion, the distance between the stations is not important, just the fact that W1AW is in the fringe area.

Now if both stations were to change their frequency to 70cm, but all other aspects stayed the same, certainly W1AW would not be able to work the W1NY repeater with the added path loss of 10 db. In fact, to compensate for the 10 db loss, W1AW would have to increase the power of his station to at least 10 watts!

There are other ways to make up for the path loss. Gain antennas at either end and improved receiver performance play a major role. Less lossy coax, duplexors and other components can all supplement the need to increase power.

One can quickly see how this applies to repeater operation in both the 2m and 70cm bands. Many of us have HT's, of course many more on 2m than 70cm. Since both 2m and 70cm HT's usually have about the same power output characteristics, it is very important for the 70cm repeater to make up for the differences in path loss.

This is even more difficult because most 70cm receivers are not as hot as 2m receivers, with many 70cm rigs having half the sensitivity. 70cm repeater sponsors and trustees spend a significant amount of work building a receiver system capable of supporting HT users. In addition to improving receiver

receiver sensitivity, the 70cm repeater usually runs more power for equal performance to its 2m counterpart. This is one reason why the FCC allows for higher ERP limits for the shorter wavelengths. A repeater that runs the maximum ERP and also has good receive characteristics demands a duplexer with low loss and high power capability, which does not come cheap!

In the commercial use of frequencies near the 70cm band, power is usually the solution to overcome additional losses. This significantly drives up the cost of equipment. Unlike the commercial service, hams don't have endless funds available to accomplish the desired result. In addition, you should see the contrast between services. Mobile commercial rigs usually run between 30 and 40 watts (for an ERP of 75 watts), sometimes even more, upwards of 100 watts. Commercial HT's typically have larger battery packs for extended life, and often more power output.

Recent advances in semi-conductor technology has brought the cost of 70cm equipment down to the best cost performance ratio ever seen. All three of the major ham vendors have 70cm offerings that include 25 or more watts of output. Many have GaAs FET front ends for real hot receiver performance.

Likewise, the HT offerings are also expanding, with more power and better receivers. This, coupled with high efficiency designs, and longer life battery packs, make 70cm HT's now a good buy.

When selecting equipment for VHF or UHF use you should first define your goals and set your expectations. Since much of the use of the VHF and UHF bands is via repeaters, we will limit our discussion

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to this application. Point to point communications have many other additional concerns, which are outside the scope of this article.

Since path losses are more significant at higher frequencies, you would think that the coverage area of a 70cm machine would be significantly less than a 2m machine. Experience has shown this statement is not true, not because of technical reasons, but because of implementations. Many 2m repeaters are quite old, still running tube type gear. Many 2m systems have not invested a significant amount of effort or money into minimizing losses; clearly the need is not there. On the other hand, many 70cm systems are fairly new, as the occupation of this band outside large population areas is just now evolving. For these reasons, many 70cm systems can match or outperform their 2m counterparts.

The point being made here is that you must first evaluate each system you wish to utilize. Ask current users or the repeater sponsor what kind of coverage the system has. Get details, not just if it can be hit in Ponduck Hollow, but how well, how reliable, and using what kind of equipment. Remember, power and antenna information is most important.

As a general rule of thumb, unless you are fairly close to the repeater site, and relatively line of sight (no mountains, etc), do not expect to get much use of the low power position of a HT if its under a watt on 70cm. Many 70cm systems have multiple receivers in many locations to provide better HT coverage, so you should also take that into consideration. Unlike 2m, 70cm is very close to microwaves, and will have more problems with blockage.

Another issue to remember for HT use is battery life. Whether 2m or 70cm, you may find it a better investment to purchase the "high power" battery packs. The Kenwood TH21/31/41 series is a good example. The standard battery provides 7.2v to the radio, and its life is limited by the 180 ma hour rating. The external C cell battery pack delivers 9v, which results in increased power output. A single C nicad cell may have a rating of 1800 ma hours or better. Kenwood also has a longer life battery pack, as well as a quick charger. ICOM HT's have a similar setup, with the larger battery packs improving life and/or power output.

HT antennas will also play a part. By the nature of HT's, their antennas are not very efficient. Although many manufactures offer "better gain" antennas for HT's, it is difficult to prove their claims. A few first hand observations have shown no significant

improvements, and in one case, degradation. Stubby duck antennas are the new fad, but offer no performance gain, and may perform even worse.

For mobile (and base) offerings, you should again evaluate your needs. Most vendors offer radios with high and low power settings, and most of the new gear will let you adjust the low power setting to meet your needs. In most cases, five watts mobile with a decent mobile antenna should handle most of your needs. For longer trips and commutes, higher power certainly will come in handy.

In mobile applications, the antenna can play a significant part in total performance. Your best choice is a gain antenna. This most likely will be a vertical, thus the ground system under the antenna is important in performance. The best bet is to center it on the trunk lid or roof.

The through the glass antennas are not good choices and should be avoided. The only positive aspect they have is ease of installation. Since they are all trying to transmit energy through glass, which is an insulator, there is loss. The match between sides of the glass is hard to keep constant, as auto glass is constructed of multiple layers of glass and plastic, and sometimes even contains metallic compounds. Temperature can also vary the tuning of the matching network, and thus the losses can go from bad to worse. The mismatch can damage a rig, even those rigs with protection.

Proper installation is also important. Many people will install and tune a mobile VHF/UHF antenna with a VSWR bridge at the rig end of the coax. For proper installation, the VSWR should be also checked at the antenna end of the coax. The length of the coax between the rig and antenna can also make a difference. You may need to cut the coax length multiple times to find the optimum match. Don't forget that even for short runs, coax and connector quality is important, and even more so for 70cm.

As you can see, there are many issues that affect the performance of your amateur station and its equipment, and path loss can play a major part in your ability to communicate. As we move upwards to higher frequencies, losses become of greater concern. Although 70cm was discussed heavily throughout this article, one can easily see that if you applied 70cm concerns to your 2m station configuration, its performance would be maximized. In closing, remember the FCC rules require that we use the minimum amount of power to carry out our communications. Although increased power seems to be the easiest answer to all communications problems, solving them by other methods is a greater challenge. Don't forget the *path loss*.

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BY-LAWS

Hampden County Radio Association, Inc.

Article 1 Membership

§1 Any person of good moral character may become a member of the Corporation by a majority vote of the Directors, providing a candidate for membership shall first present an application to the Clerk of the Corporation for consideration.

§2 Any member of the Corporation who holds a valid amateur radio station and/or operator license shall be a Regular Member of the Corporation, and entitled to vote at meetings of the Corporation and hold office therein. All others shall be Associate Members without the right to vote or hold office.

Article II Officers

§1 At the first and subsequent annual meetings of the Corporation there shall be elected for one year terms by majority vote of Regular Members present thereat, a President, Vice President, Treasurer and Clerk who shall also be and have the powers of Directors and at the first annual meeting there shall likewise be elected four Directors for one and four for two year terms and thereafter four Directors shall be elected for two year terms at each annual meeting.

§2 The President shall preside at all meetings of the Corporation and of the Directors of the Corporation, and in his absence, the Vice President shall preside.

§3 The Treasurer shall receive all monies and other properties due the Corporation and shall disburse the same according to the directions of the Directors. He shall keep accurate books and records of all of his doings, which books and records shall be open to the inspection of any member of the Corporation in good standing at all reasonable times, and he shall perform all other functions normally necessary and required of a Treasurer.

§4 The Clerk shall keep records of all meetings of the Corporation and of the Directors of the Corporation, shall maintain a directory of the membership, shall send notices and make other mailings as may be required and necessary, and shall so all other things normally necessary and required of a Secretary or Clerk.

§5 The Directors shall have general charge of all business and activities of the Corporation, shall hold such meetings as may be necessary, shall approve all disbursements of the Corporation, shall determine the form of application for membership in the Corporation and reject or approve applicants for membership to meetings of the Corporation, shall fill vacancies occurring in any office of the Corporation, and shall do all other things expedient in carrying out the objects and purposes of the Corporation.

Article III Meeting

§1 Annual Meetings of the Corporation shall be held during the month of June of each year.

§2 Regular Meetings shall be held monthly at a time and place to be designated by the Directors. The Directors may choose not to hold a monthly meeting by majority vote.

§3 Special Meetings shall be called by the President on the request of any ten Regular Members in good standing and he shall call special meetings of the Directors on the request of any four Directors.

§4 Members shall be given not less than four days written notice of the time and place of regular meetings to be scheduled for a time and place by the Directors and they shall be given a like notice of all special meetings with a statement as to the purpose thereof.

Article IV Quorum

§1 A quorum at regular, special and annual meetings of the Corporation shall consist of fifteen Regular Members in good standing and at a meeting of the Directors a quorum shall consist of seven Directors.

§2 A Regular Member of the Corporation in good standing shall be entitled to one vote at meetings of the Corporation.

Article V Dues

§1 Dues shall be payable on November first in each year. Any member in arrears shall not be considered in good standing and may be suspended from membership by majority vote of the Directors.

By-Laws continued on next page

§2 The Directors shall determine an annual schedule of dues by majority vote. All members shall be given not less than four days written notice of the annual dues schedule prior to November first of each year.

§3 The Directors for good cause may, in their discretion, remit the dues of any member otherwise in good standing.

§4 The dues schedule must be presented to the applicant upon his application for membership in the Corporation. The Directors shall determine the applicant's or member's eligibility to the selected dues schedule.

Article VI By-Laws

§1 These by-laws may be amended by a majority vote of the members in good standing and present at a meeting of the Corporation, of which all members shall have had a four day notice of the time and place of said meeting and of the subject matter of the amendment proposed.

Article VII Miscellaneous

§1 None of the officers or members of the Corporation shall subject the Corporation to obligations or liabilities beyond its ability to pay therefor from its funds and properties.

§2 There shall be no assessments levied against any members of the Corporation unless and until a majority of the members at a meeting of the Corporation shall vote said levy, and unless all members shall have had a four day notice of the time and place of said meeting and of the subject matter of the assessment proposed.

Elections

Four director positions and four officer positions are up for re-election at the annual meeting. The Board is currently looking for interested individuals who would like to help out with the running of the club. If you are interested, please contact Steve Nelson, WA1EYF, Chair of the Nomination Committee. Steve can be reached at 413-596-8216.

The following directors' terms have one year left to go, and have agreed to continue to serve their term on the board: Ray WA1GLX, Yorke K1BXE, Bob KA1JDY, and Jeanette KA1MEW.

Thank You for Your Support!

HCRA Zero Beat June 1986

Treasurer's Report

Bank Balance
12-May-1985 \$1,435.58

Revenue

Membership	\$1808.00
Donations	1397.70
Coffee	163.38
Printed Material	149.80
ARRL Class Material	24.25
1985 Banquet	3.11
Auction	54.62
Raffles	73.00
Flea Market	75.00
Advertising	50.00
ARRL memberships	29.00
Total Revenue	\$3827.86

Expenses

US Postage	\$590.57
Zero Beat Printing	883.60
Club Meeting Hall	315.00
Misc Supplies	58.09
Class Room Tapes	73.40
AMSAT	50.00
2m Repeater Ant	125.00
Basketball Hall	58.13
Plaques/Gifts	49.70
IRS Records	14.45
Total Expenses	\$2217.94

Bank Balance
10-May-1986 \$3045.50

*** Packet Digipeater Update ***

John KD9MU is going to be taking over the trustee duties of the club digipeater. KA1KPH is donating the equipment to the club, and Art W1KK has agreed to have the club call W1NY on the digipeater! John will be upgrading the equipment shortly, and packet users should be aware that KA1KPH-1 will become W1NY-1. Watch bulletin boards for further information!

Yankee/Rowe Plant Test Wednesday June 11, 1986

There will be an emergency test of the Nuclear Power Plant at Rowe on 11-Jun-86. Operators are needed for the Emergency Operations Centers, Evacuation Centers, and Red Cross Facilities. Contact Cliff, W1SJY; Rick, WB1FSV; or Dick WB1HIH for more info. Please consider helping with this most important drill!

Remember, you should now send your Zero Beat material to the HCRA club mailing address, P O Box 482, West Springfield, MA 01090-00482

The Back Page

The Hampden County Radio Association will sponsor ARRL VEC exams at the Wilbraham Regional High School on Main Street in Wilbraham on the following dates:

Saturday 24-May-86
Wednesday 9-Jul-86 (nite)
Saturday 13-Dec-86

Please contact Yorke K1BXE for more info at 413-566-3010

HELP!

License classes sponsored by the HCRA will again start up in the fall. We will need a number of instructors to cover all license classes. If you can lend a hand, please contact any board member as soon as possible. Thank you!

DON'T FORGET:

June Banquet

Friday June 6th

Dave Sumner K1ZZ, Executive Vice President of the American Radio Relay League, Inc. will be our guest speaker.

Tickets are \$5.00 per person. Many board members have tickets available. You may also contact Ron WB1ETS, or mail a check payable to the HCRA at the club PO box address, and we will return mail your tickets, or hold them for the banquet. Seating is limited, so get your tickets early!

Late News! Monsanto has selected the HCRA for a \$400 award for exceptional volunteer service. Tnx to Jeff K1BE and all Monsanto hams for making this possible!

Do you have JUNK to sell?
Looking for good used gear?
Here's a list of upcoming events:

FLEA MARKETS

Sunday May 18 Dalton, MA
Sunday June 8 Newington, CT
September 21 Dalton, MA
October 4 Deerfield, NH

Field Day June 28-29

Middlefield Fair Grounds

See information
inside!

Have you a notice for the BACK PAGE? If so, drop a line to the HCRA, P O Box 482, West Springfield, MA 01090-0482

Hampden County
Radio Association, Inc.

P O Box 482
West Springfield MA 01090-0482

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